Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1. (Currently Amended) Apparatus for electrical mapping of a pulmonary vein of a heart, comprising:

(a) a catheter, which comprises:

(i) a curved section comprising a single-coil position sensor for generating five position and orientation dimensions, and one or more electrodes, adapted to measure an electrical property of the pulmonary vein; and

(ii) a base section having a distal end attached to a proximal end of the curved section, the base section comprising a multi-coil position sensor within 3 mm of the distal end thereof for generating six position and orientation dimensions; and

(b) a computer for determining five-dimensional dispositions of the single-coil position sensor and six-dimensional dispositions of the multi-coil position sensor and combining the electrical property of the pulmonary vein for determining electrical abnormalities in the pulmonary vein for selecting target tissue to ablate in the pulmonary vein.

Claim 2. (Original) The apparatus according to claim 1, wherein the multi-coil position sensor is positioned within 1 mm of the distal end of the base section.

Claim 3. (Original) The apparatus according to claim 1, wherein the curved section comprises a material that is flexible, and

maintains a substantially fixed length of the curved section.

Claim 4. (Original) The apparatus according to claim 1, wherein the curved section has an elasticity that is generally constant over at least a quarter of the curved section.

Claim 5. (Original) The apparatus according to claim 1, wherein the multi-coil position sensor comprises exactly two coils.

Claim 6. (Original) The apparatus according to claim 1, wherein the multi-coil position sensor comprises exactly three coils.

Claim 7. (Original) The apparatus according to claim 1, wherein the catheter comprises one or more ablation elements.

Claim 8. (Original) The apparatus according to claim 1, wherein at least one of the electrodes is adapted to perform ablation.

Claim 9. (Original) The apparatus according to claim 1, wherein the single-coil position sensor is positioned in a vicinity of a distal end of the curved section.

Claim 10. (Original) The apparatus according to claim 1, wherein the curved section comprises a center single-coil position sensor in a vicinity of a center thereof.

Claim 11. (Original) The apparatus according to claim 1, wherein the curved section is shaped to generally conform to a shape of an interior surface of the pulmonary vein.

Claim 12. (Canceled)

Claim 13. (Currently Amended) The apparatus according to claim 1, wherein the ~~apparatus comprises a processor, adapted to~~ computer generates an electrophysiological map of the pulmonary vein responsive to respective position signals generated

by the single-coil and multi-coil position sensors, and responsive to the electrical property.

Claim 14. (Original) The apparatus according to claim 1, wherein the multi-coil position sensor comprises two or more non-concentric coils.

Claim 15. (Original) The apparatus according to claim 14, wherein the two or more non-concentric coils are arranged so as to be mutually orthogonal.

Claim16. (Currently Amended) Apparatus for electrical mapping of a pulmonary vein of a heart, comprising:

(a) a catheter, which comprises:

(i) a curved section comprising a first position sensor, capable of generating fewer than six dimensions of position and orientation information, and one or more electrodes, adapted to measure an electrical property of the pulmonary vein; and

(ii) a base section having a distal end attached to a proximal end of the curved section, the base section comprising, within 3 mm of the distal end thereof, a second position sensor, capable of generating six dimensions of position and orientation information; and

(b) a processor for determining fewer than six dimensions of position and orientation information of the first position sensor and six dimensions of position and orientation information of the second position sensor and combining the electrical property of the pulmonary vein for determining electrical abnormalities

in the pulmonary vein for selecting target tissue to ablate in the pulmonary vein.

Claim 17. (Original) The apparatus according to claim 16, wherein the second position sensor is positioned within 1 mm of the distal end of the base section.

Claim 18. (Original) The apparatus according to claim 16, wherein the curved section comprises a material that is flexible, and maintains a substantially fixed length of the curved section.

Claim 19. (Original) The apparatus according to claim 16, wherein the curved section has an elasticity that is generally constant over at least a quarter of the curved section.

Claim 20. (Original) The apparatus according to claim 16, wherein the catheter comprises one or more ablation elements.

Claim 21. (Original) The apparatus according to claim 16, wherein at least one of the electrodes is adapted to perform ablation.

Claim 22. (Original) The apparatus according to claim 16, wherein the first position sensor is capable of generating exactly five dimensions of position and orientation information.

Claim 23. (Original) The apparatus according to claim 16, wherein the first position sensor is positioned in a vicinity of a distal end of the curved section.

Claim 24. (Original) The apparatus according to claim 16, wherein the curved section comprises a third position sensor in a vicinity of a center thereof, capable of generating fewer than six dimensions of position and orientation information.

Claim 25. (Original) The apparatus according to claim 16, wherein the curved section is shaped to generally conform to a shape of an interior surface of the pulmonary vein.

Claim 26. (Canceled)

Claim 27. (Currently Amended) The apparatus according to claim 16, wherein the ~~apparatus comprises a~~ processor~~, adapted to~~ generates an electrophysiological map of the pulmonary vein responsive to respective position signals generated by the first and second position sensors, and responsive to the electrical property.

Claim 28. (Currently Amended) Apparatus for electrical mapping of a pulmonary vein of a heart, comprising:

(a) a catheter, which comprises:

(i) a curved section comprising a first position sensor in a vicinity of the distal end, capable of generating fewer than six dimensions of position and orientation information, and one or more electrodes, adapted to measure an electrical property of the pulmonary vein;

(ii) a base section having a distal end attached to a proximal end of the curved section, the base section comprising, within 3 mm of the distal end thereof, a second position sensor, capable of generating six dimensions of position and orientation information; and

(b) a processor~~, adapted to~~ for determining fewer than six dimensions of position and orientation information of the first position sensor and six dimensions of position and orientation information of the second

position sensor and combining the electrical property of the pulmonary vein for determining electrical abnormalities in the pulmonary vein for selecting target tissue to ablate in the pulmonary vein and generateing an electrophysiological map of the pulmonary vein responsive to respective position signals generated by the first and second position sensors, and responsive to the electrical property.

Claim 29. (Original) The apparatus according to claim 28, wherein the processor is adapted to calculate respective six-dimensional position and orientation coordinates of the one or more electrodes, responsive to the respective position signals.

Claim 30. (Currently Amended) Apparatus for electrical mapping of a chamber of a body of a subject, comprising:

(a) a catheter, which comprises:

(i) a curved section comprising a first position sensor, capable of generating fewer than six dimensions of position and orientation information, and one or more electrodes, adapted to measure an electrical property of the chamber; and

(ii) a base section having a distal end attached to a proximal end of the curved section, the base section comprising, within 3 mm of the distal end thereof, a second position sensor, capable of generating six dimensions of position and orientation information; and

(b) a processor for determining fewer than six dimensions of position and orientation information

of the first position sensor and six dimensions of position and orientation information of the second position sensor and combining the electrical property of the chamber for determining electrical abnormalities in the chamber for selecting target tissue to ablate in the chamber.

Claim 31. (Original) The apparatus according to claim 30, wherein the first position sensor is positioned in a vicinity of a distal end of the curved section.

Claim 32. (Original) The apparatus according to claim 30, wherein the curved section comprises a third position sensor in a vicinity of a center thereof, capable of generating fewer than six dimensions of position and orientation information.

Claim 33. (Currently Amended) A method for electrical mapping of a pulmonary vein of a heart, comprising:

introducing into the heart a catheter having a curved section and a base section, the base section having a distal end attached to a proximal end of the curved section;

generating, at a location on the curved section, a first position signal having fewer than six dimensions of position and orientation information, and, at a vicinity of the distal end of the base section, a second position signal having six dimensions of position and orientation information; ~~and~~

measuring, at one or more locations on the curved section, an electrical property of the pulmonary vein;

determining fewer than six dimensions of position and orientation information of the first position signal and

six dimensions of position and orientation information of the second position signal and combining with the electrical property of the pulmonary vein;

determining electrical abnormalities in the pulmonary vein; and

selecting target tissue to ablate in the pulmonary vein.

Claim 34. (Original) The method according to claim 33, wherein generating the first position signal comprises generating the first position signal having exactly five dimensions of position and orientation information.

Claim 35. (Original) The method according to claim 33, wherein generating the first position signal comprises generating the first position signal at a vicinity of a distal end of the curved section.

Claim 36. (Original) The method according to claim 33, comprising generating, at a vicinity of a center of the curved section, a third position signal having fewer than six dimensions of position and orientation information.

Claim 37. (Original) The method according to claim 33, comprising calculating respective six-dimensional position and orientation coordinates of the one or more locations on the curved section at which the electrical property is measured, responsive to the first and second position signals.

Claim 38. (Original) The method according to claim 33, comprising generating an electrophysiological map of the pulmonary vein responsive to the first position signal, the second position signal, and the electrical property.

Claim 39. (Original) The method according to claim 33, wherein generating the second position signal comprises generating the second position signal at a location within 3 mm of the distal end of the base section.

Claim 40. (Original) The method according to claim 39, wherein generating the second position signal comprises generating the second position signal at a location within 1 mm of the distal end of the base section.

Claim 41. (Original) The method according to claim 33, comprising ablating tissue of the pulmonary vein responsive to the first position signal, the second position signal, and the electrical property.

Claim 42. (Original) The method according to claim 41, wherein ablating the tissue comprises determining a location of an electrical abnormality in the tissue responsive to the first position signal, the second position signal, and the electrical property, and ablating the tissue substantially at the location.

Claim 43. (Original) The method according to claim 33, wherein introducing the catheter into the heart comprises positioning the curved section within the pulmonary vein.

Claim 44. (Original) The method according to claim 43, wherein positioning the curved section within the pulmonary vein comprises positioning the base section within a left atrium of the heart.

Claim 45. (Original) The method according to claim 43, wherein positioning the curved section within the pulmonary vein comprises generally maintaining a point of attachment of the

curved and base sections in a vicinity of an ostium of the pulmonary vein while mapping the pulmonary vein.

Claim 46. (Currently Amended) A method for electrical mapping of a chamber of a body of a subject, comprising:

introducing into the chamber a catheter having a curved section and a base section, the base section having a distal end attached to a proximal end of the curved section;

generating, at a location on the curved section, a first position signal having fewer than six dimensions of position and orientation information, and, at a vicinity of the distal end of the base section, a second position signal having six dimensions of position and orientation information; ~~and~~

measuring, at one or more locations on the curved section, an electrical property of the chamber;

determining fewer than six dimensions of position and orientation information of the first position signal and six dimensions of position and orientation information of the second position signal and combining with the electrical property of the chamber;

determining electrical abnormalities in the chamber; and

selecting target tissue to ablate in the chamber.

Claim 47. (Original) The method according to claim 46, wherein generating the first position signal comprises generating the first position signal at a vicinity of a distal end of the curved section.

Claim 48. (Original) The method according to claim 46, comprising generating, at a vicinity of a center of the curved

section, a third position signal having fewer than six dimensions of position and orientation information.